

## Unit 7 - Day 6 Work problems

**Ex1:** Diana can mow the lawn in 20 minutes. Joan can mow the lawn in 30 minutes. If they work together, how long will it take them to mow the lawn?

	rate part/min	time	part of job completed
Diana	$\frac{1}{20}$	$m$	$\frac{m}{20}$
Joan	$\frac{1}{30}$	$m$	$\frac{m}{30}$

let  $m = \#$  minutes it takes them to mow the lawn together

$$\begin{array}{c} \text{Diana's} \\ \text{part} \end{array} + \begin{array}{c} \text{Joan's} \\ \text{part} \end{array} = \text{whole}$$
$$\frac{m}{20} + \frac{m}{30} = 1$$

$$3m + 2m = 60$$

$$5m = 60$$
$$m = 12$$

12 mins

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**Ex2:** An experienced carpenter can panel a room 3 times faster than an apprentice can. Working together, they can panel the room in 6 hours. How long would it take each one working alone to do the job?

	rate/hr	time	Part
Exp	$\frac{1}{x}$	6	$\frac{6}{x}$
App	$\frac{1}{3x}$	6	$\frac{6}{3x} = \frac{2}{x}$

let  $x$  = time take for exp carp.  
to finish alone (h)  
 $3x$  = time takes apprentice alone

$$\begin{array}{c} \text{Exp.} \\ \text{Part} \end{array} + \begin{array}{c} \text{App} \\ \text{Part} \end{array} = \text{whole}$$

$$x \left( \frac{6}{x} + \frac{2}{x} = 1 \right)$$

$$6 + 2 = x$$

$$8 = x$$

8 hrs for Exp, 24 hrs apprentice

8                      P, 1                      P                      1